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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,180	05/30/2007	Gerd Wagner	15111.0087	4526

88859 7590 07/20/2010

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EXAMINER	
JOHANNSEN, DIANA B	
ART UNIT	PAPER NUMBER
1634	
MAIL DATE	DELIVERY MODE
07/20/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,180	WAGNER ET AL.	
	Examiner	Art Unit	
	Diana B. Johannsen	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-9 and 11-19* is/are pending in the application.

4a) Of the above claim(s) *11-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *0409*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This application is a 371 of PCT/EP05/00751, filed January 26, 2005. The International Search Report for the PCT application has been received and considered.

2. This action is responsive to the Amendment and the response to restriction requirement filed April 26, 2010. Claims 1 and 10 have been canceled, and claims 2 and 17 have been amended. Claims 11-19 are withdrawn (see paragraph 4 below), and claims 2-9 are under consideration herein.

Election/Restrictions

3. Applicant's election of Group II and of the combination of oligonucleotides of SEQ ID NOS 72-73, 76-81, 84-91, and 5-63 in the reply filed on April 26, 2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

4. Claims 11-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 26, 2010.

Compliance with Sequence Rules

5. Receipt is acknowledged of the Sequence Listing filed May 30, 2007 (in paper and electronic forms), and applicant's required statement that the paper and computer readable forms are the same and do not include new matter. Receipt is also acknowledged of applicant's amendments to the specification (of the same date) to include the required sequence identifiers. However, applicant appears to have

inadvertently neglected to provide an amendment directing the entry of the sequence listing itself into the specification (see the requirement noted on page 1 of the Form PCT/DO/EO/905 mailed on March 30, 2007). Accordingly, in response to this Office action, applicant **must provide** the required amendment directing the entry of the Sequence Listing filed May 30, 2007 into the specification.

Specification and Oath/Declaration

6. The amendment filed July 25, 2006 is **objected to** under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the incorporation by reference of foreign priority application 10 2004 003 860.0. This incorporation of applicant's foreign priority document into the instant specification does not appear to find basis in PCT/EP2005/000751, such that applicant's amendment (attempting to incorporate this document at a date later than the filing date of the application of which the instant application is the national stage) add new matter to the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

7. Regarding applicant's amendment of July 25, 2006, it is also noted that the instant application cannot technically "claim priority" benefit of PCT/EP2005/000751 as it is in fact the national stage of that application (see MPEP 1893.03(c), second to last paragraph). However, as the instant application was filed and accepted as a 371 application, the record is clear with respect to the status of the application (accordingly, deletion of the priority language regarding PCT/EP20005/000751 is **not** required,

although applicant may choose to delete this language or amend it to state, e.g., "This application is the national stage of ...."). It is also noted that the application data sheet of July 25, 2006 correctly recites the status of the application.

8. Similarly, while the oath/declaration of May 30, 2007 includes an improper priority claim under 35 USC 120 to the same PCT application, the oath/declaration in its current form is acceptable because the status of the instant application as a 371 application is not in question (see Form PCT/DO/EO/903 (371 Acceptance Notice) mailed October 26, 2007).

9. The disclosure is also **objected to** because of the following informalities: the disclosure lacks a brief description of each of the drawings. See MPEP 608.01(f) and 37 CFR 1.74. Appropriate correction is required. It is also suggested that applicant amend the specification to provide the title "Brief Description of the Drawings" or "Brief Description of the Figures"; applicant is also reminded of the proper arrangement of the sections of a specification (see MPEP 608.01(a) and 37 CFR 1.77(b).

10. The disclosure is **also objected** to because it contains an embedded hyperlink and/or other form of browser-executable code (see pages 11 and 20). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. It is noted that this objection may be overcome by simply deleting the recitation "http:" in each of the hyperlinks (thereby deactivating the hyperlinks).

Drawings

11. The drawings are objected to because Figures 1-16, 18a-18b, and 19a-19c each contain dark backgrounds or areas of dark background that will render the content of the Figures difficult to see upon printing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112, second paragraph

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 2-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 2-9, the phrases "preferably" and "particularly preferably" in independent claim 2 (item ii)) render the claims indefinite because it is unclear whether the limitations following these phrases are (or are not) part of the claimed invention. See also MPEP § 2173.05(c)(providing a similar example in which the use of the term "preferably" was found to render a claim indefinite).

Claims 2-9 are indefinite over the recitation of the phrase "and allowing specific hybridization with nucleic acid sequences of bacterial strains of the species Pseudomonas aeruginosa" (see item ii) of independent claim 2) because it is unclear how this requirement actually limits the claims. Paragraph 32 of the specification states that "Herein, 'specific hybridization' signifies that, under the stringent hybridization conditions described herein or known to one skilled in the art in connection with in situ and in vitro hybridization techniques, the target nucleic acids bind to the probe more strongly than the non-target nucleic acids and that essentially only the target nucleic acids, but not the non-target nucleic acids, preferably bind to the probe". Regarding the meaning of the term "stringent conditions," paragraph 69 of the specification states that:

> Generally, the term 'stringent conditions' denotes, conditions, under which a nucleic acid sequence will preferentially bind to its target sequence, and to a distinctly lesser extent, or not at all, to other sequences. Stringent conditions are partially sequence-dependent and will be different under different circumstances.

Thus, it is clear that the term “stringent conditions” as employed in the specification embraces a variety of different types of conditions, which conditions may vary “under different circumstances”. Similarly, stringent conditions “known to one skilled in the art in connection with in situ and in vitro hybridization techniques" would also embrace a variety of different types of conditions, depending on the goal of a particular assay. Thus, given the guidance in the specification, the language “allowing specific hybridization with nucleic acid sequences of bacterial strains of the species Pseudomonas aeruginosa” provides not clear and fixed guidance regarding the types of probes embraced by the claims, but rather suggests that the types of products embraced by the claims could be widely variable depending on the type of “stringent conditions” employed in a particular assay (i.e., the number and type of oligonucleotides embraced by the claims would vary depending upon the manner in which the device of the claims would be used). Such language is indefinite, as it does not clearly apprise one of skill in the art as to what types of devices are embraced by the claims and what types are excluded therefrom.

Claims 2-9 are indefinite over the recitation of the language “oligonucleotides hybridizing with a sequence, which is complementary to an oligonucleotide under i), ii) and iii) under stringent conditions” in claim 2, item iv). As discussed above, the specification indicates that the term “stringent conditions” may mean different things "under different circumstances," such that the term could be interpreted as, e.g., limiting the claims to one set of probes if intended for use in one type of assay, and a different set of probes if intended for use in a different type of assay. Thus, this language does

not provide definite boundaries for the product being claimed. It is noted that paragraph 69 of the specification does state that "In general, stringent conditions are selected in such a way that the temperature is about 5° C below the thermal melting point Tm for the specific sequence at a defined ionic strength and a defined pH value"; however, this statement provides guidance "In general" rather than a limiting definition that may reasonably be imported into the claims. Accordingly, as the language of item iv) of claim 2 does not reasonably apprise a skilled artisan as to the types of oligonucleotides that are embraced by and excluded from the claims, this language renders the claims indefinite.

Claim 3 is indefinite over the recitation of the limitation "reaction tube having a shape and/or size typical for a laboratory reaction tube". It is noted that paragraph 37 of the specification states that "laboratory reaction tubes of typical shape and size are understood to denote reaction tubes usually utilized, in particular, in biological or molecular-biological laboratories as disposable reaction tubes, containing 1.5 ml in the standard type," and continues to reference "Eppendorf tubes" and equivalent tubes produced by other manufacturers. Thus, it is clear that the claim does encompass the type of disposable tube widely known to those of ordinary skill in the art as an "Eppendorf tube". Additionally, the specification in paragraph 38 clearly excludes "round-bottomed flasks or other flasks like Erlenmeyer flasks, glass beakers, or measuring cylinders." However, the metes and bounds of the claim are unclear because the specification does not make clear what additional types of laboratory reaction tubes are and are not embraced by the claim. The specification provides

additional guidance in paragraphs 39-42 regarding the characteristics of the tubes of the invention, and it is particularly noted that paragraph 39 describes preferred shapes and preferred external diameters, and that paragraph 41 teaches "typical filling volumes". However, both paragraph 39 and the claim itself clearly require only the size OR the shape of a "typical" tube, and it is further noted that paragraph 41 states that "typical" filling volumes "can also be larger or smaller in special embodiments". Thus, it is not clear what the actually boundaries of the claim are. For example, it is not clear whether a standard test tube (either disposable or reusable) would or would not be embraced by the claims (and if so, whether there is a size limit on such a tube that would apply). Clarification is therefore required with regard to the actual structural requirements of the tubes embraced by the claim, such that a skilled artisan is reasonably apprised as to what products are encompassed by and excluded from applicant's claim.

Claim 4 is indefinite over the recitation of the limitation "in each case," because it is unclear what "case" or type of "case" is referenced by this term. It is noted that the claims are drawn to a device, not to, e.g., a method in which a number of repetitions of an assay are performed or in which a number of "cases" are assayed. Accordingly, clarification is required with regard to how the probes of the claimed device relate to "each case" referenced in the claim.

Claim 5 is indefinite over the recitation of the limitation "compared to the sequence of the reference strain of *Pseudomonas aeruginosa*." The claims do not previously reference any sequence of a "reference strain" of *P. aeruginosa*, and it is not clear what sequence or type of sequence is required or referenced by this language.

Regarding claim 8, the use of the term "like" in the phrase "like *exoS* and *exoU*" renders the claim indefinite because it is unclear whether the limitations following the term "like" are part of the claimed invention. See MPEP § 2173.05(c) and (d) regarding the use of such language.

Claim Rejections - 35 USC § 112, first paragraph

14. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

15. Claims 2-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The claims have been evaluated in accordance with the Guidelines for Examination of Patent Applications under the 35 USC 112, first paragraph "Written Description" Requirement (*66 Fed. Reg. 1099* [01/05/2001]) and in accordance with the guidance provided in *MPEP* 2163.

Claims 2-9 are drawn to a "Microarray device comprising a support element, on which oligonucleotide probes are immobilized on predetermined regions, for specifically detecting bacterial strains of the species Pseudomonas aeruginosa" (see text of independent claim 2). It is noted that applicant has elected for examination a particular combination of probes, SEQ ID NOS 72-73, 76-81, 84-91, and 5-63, from those of item

i) of claim 2. This elected group of probes is clearly described by particular SEQ ID NOS, as are probes including the full length of these SEQ ID NOs (as it item iii) of claim 2). However, claim 2 also encompasses variants of the elected combination as set forth in items ii) and iv) of claim 2:

ii) oligonucleotides matching one of the oligonucleotides under i) in at least 60%, preferably in at least 80%, and particularly preferably in at least 90%, 92%, 94 %, 96% of the bases and allowing specific hybridization with nucleic acid sequences of bacterial strains of the species *Pseudomonas aeruqinosa;* and

iv) oligonucleotides hybridizing with a sequence, which is complementary to an oligonucleotide under i), ii) and iii), under stringent conditions.

The **limitations at issue** in the present rejection are those of items ii) and iv) of claim 2. Because the claimed device may include oligonucleotides having these characteristics, oligonucleotides meeting the requirements of ii) and iv) are essential or critical features of the invention that must be adequately described. Items ii) and iv) each encompass a variety of different oligonucleotides meeting the structural and/or functional characteristics recited, and therefore each encompass a genus of different oligonucleotides that may be present on the claimed device. Particularly, item ii) encompasses any oligonucleotide at least 60% identical to one of the recited SEQ ID NOS and further "allowing specific hybridization with nucleic acid sequences of bacterial strains of the species *Pseudomonas aeruqinosa"*; while this language is indefinite for the reasons given above, it is apparent that this language may embrace a variety of different types of oligonucleotides that might function under a variety of different types of

conditions. Item iv) is also unclear (as discussed above), and appears to encompass an even broader genus of molecules that may be employed under conditions of varying stringency. The written description requirement for such genus claims may be satisfied through sufficient written description of a representative number of species by (a) actual reduction to practice, (b) reduction to drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole, or (c) by disclosure of relevant identifying characteristics or by a combination of such characteristics sufficient to show possession of the claimed genus (see *MPEP* 2163 II A 3(a)(ii); see *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406). As discussed in *MPEP* 2163 II A 3(a)(ii):

> A "representative number of species" means that the species which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus. The disclosure of only one species encompassed within a genus adequately describes a claim directed to that genus only if the disclosure "indicates that the patentee has invented species sufficient to constitute the gen[us]." See *Enzo Biochem*, 323 F.3d at 966, 63 USPQ2d at 1615; *Noelle v. Lederman*, 355 F.3d 1343, 1350, 69 USPQ2d 1508, 1514 (Fed. Cir. 2004).

a) With regard to (a) (an actual reduction to practice), the instant specification discloses an actual reduction to practice of the use of the elected group of SEQ ID NOS 72-73, 76-81, 84-91, and 5-63 (see Figure 18 and the Example beginning at page 42). However, this particular group is explicitly recited in item i) of claim 2, whereas items ii) and iv) clearly encompass a large number of additional oligonucleotides not requiring these particular SEQ ID NOS. The specification does not provide any reduction to

practice with respect to any group of oligonucleotides embraced by ii) and iv) of claim 2 (other than the preferred group of item i) itself).

b) With regard to (b) (reduction to drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole), applicant's figures depict the sequences of the elected group of SEQ ID NOS (Figure 18), and depict the use of these preferred oligonucleotides (see, e.g., Figures 1-15). However, the figures lack any disclosure of any additional or broader group of oligonucleotides embraced by ii) and iv).

c) With regard to (c) (disclosure of relevant identifying characteristics or a combination of such characteristics sufficient to show possession of the claimed genus), *MPEP* 2163 II A 3(a) states with regard to the description of biomolecules that "examples of identifying characteristics include a sequence, structure, binding affinity, binding specificity, molecular weight, and length." In the instant case, item ii) includes a structural requirement for at least 60% identify with a recited SEQ ID NO, and a skilled artisan could clearly calculate and determine the (large) genus of molecules that would meet this structural requirement. However, the claim also requires an oligonucleotide that allows "specific hybridization with nucleic acid sequences of bacterial strains of the species *Pseudomonas aeruginosa*", and the specification provides no guidance with regard to, e.g., which regions of each SEQ ID NO are critical in performing this function. Thus, applicants have not disclosed any relevant identifying characteristics or combinations thereof that would lead a skilled artisan to conclude that applicant had possession of the claimed genus of oligonucleotides. Further, neither the specification

nor the art discloses any art-recognized correlations between the functional property of the claims and sequence/structural elements of the elected probes. Lacking this information, and given that applicant has only reduced to practice a single particular group of sequences, it appears that significant further testing would be required to identify molecules meeting the requirements of the claims; the invention as claimed is not in fact described. Similarly, regarding item iv), the specification provides no guidance with regard to, e.g., which regions or sequences must be present – i.e., what sequences/structures are critical -- in performing the function of hybridizing under "stringent conditions" so as to permit detection of *P. aeruginosa*. Lacking such guidance from the specification and/or the art, applicant has not established possession of a species that can be considered representative of the broad genus claimed.

In conclusion, while applicant has described and established possession of a particular group of probes (SEQ ID NOS 72-73, 76-81, 84-91, and 5-63) that function in *P. aeruginosa* detection, this group is not representative of the broad genus of molecules embraced by the language of ii) and iv) of claim 2, such that a written description is lacking with regard to applicant's invention as claimed.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 2 and 4-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wagner et al (Journal of Bacteriology 185(7):2080-2095 [April 2003]; cited in IDS), as evidenced by the Affymetrix Data Sheet for GeneChip Pseudomonas aeruginosa (2003-2005, cited in IDS).

The claims are drawn to a microarray device "comprising a support element, on which oligonucleotide probes are immobilized on predetermined regions, for specifically detecting bacterial strains of the species Pseudomonas aeruginosa" (see independent claim 2). While it is again noted that applicant has elected a preferred group of SEQ ID NOs 72-73, 76-81, 84-91, and 5-63 for examination, independent claim 2 embraces, e.g., any oligonucleotide "hybridizing with a sequence, which is complementary to an oligonucleotide under i), ii) and iii), under stringent conditions". The specification teaches that:

> Generally, the term 'stringent conditions' denotes, conditions, under which a nucleic acid sequence will preferentially bind to its target sequence, and to a distinctly lesser extent, or not at all, to other sequences. Stringent conditions are partially sequence-dependent and will be different under different circumstances.

Although applicant's claim language is unclear (as discussed above), it is clear that the term "stringent conditions" as employed in the specification embraces a variety of different types of conditions, which conditions may vary "under different circumstances"; further, it appears that any oligonucleotides capable of detecting *P. aeruginosa* under at least some type of conditions selected by a practitioner are embraced by the claims.

Wagner et al teach the use of high density oligonucleotide arrays provided by Affymetrix ("Affymetrix P. aeruginosa GeneChip arrays") that permit "global gene expression profiling" of *P. aeruginosa* strain PAO1 (see entire reference, particularly page 2080). The Affymetrix Data Sheet establishes that it is an inherent characteristic of the GeneChip employed by Wagner et al that it "contains probes to over 5,500 ORFs" that "comprehensively represent" the genome of *P. aeruginosa* PAO1 (see entire reference, particularly the first page). Thus, the microarrays of Wagner et al could clearly be employed in "detecting bacterial strains of the species *P. aeruginosa*," and further include oligonucleotides meeting the broadly drawn requirements of item iv of claim 2, as the claim is drawn to a device and allows for the use of any type of "stringent conditions". It is further noted that each region of a microarray containing a particular probe is inherent "predetermined" in some fashion by the individual preparing the microarray. Accordingly, the device disclosed by Wagner et al meets the requirements of claim 2. Regarding claim 4, as the claim is drawn to a product (rather than a method employing particular conditions), the microarray of Wagner et al meets the requirements of the claim, as the microarray could be employed in conditions such that the oligonucleotides thereon could detect the required percentage of *P. aeruginosa* strains in a particular "case". Regarding claims 5-9, as the specification contains no limiting definition of the terminology "specific for," the probes of the microarray need only be "specific for" a target relative to some other molecule, such that the microarrays of Wagner et al may be employed in such a way that they meet the requirements of the claims. (However, it is additionally again noted that the microarray of Wagner et al is

disclosed as being useful in detection/analysis of a particular *P. aeruginosa* strain and in comprehensively representing all genes of that strain; further, the Affymetrix Data sheet explicitly discloses the presence of probes to pathogenicity islands, which are also a type of "disease associated gene")

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al in view of Wagner et al (Journal of Bacteriology 185(7):2080-2095 [April 2003]; cited in IDS), as evidenced by the Affymetrix Data Sheet for GeneChip Pseudomonas aeruginosa (2003-2005, cited in IDS), in view of Schultz et al (WO 03/059,519 A1 [24 July 2003]; cited in IDS).

The claims are drawn to a microarray device "comprising a support element, on which oligonucleotide probes are immobilized on predetermined regions, for specifically detecting bacterial strains of the species Pseudomonas aeruginosa" (see independent claim 2). While it is again noted that applicant has elected a preferred group of SEQ ID NOs 72-73, 76-81, 84-91, and 5-63 for examination, independent claim 2 embraces, e.g., any oligonucleotide "hybridizing with a sequence, which is complementary to an oligonucleotide under i), ii) and iii), under stringent conditions". The specification teaches that:

> Generally, the term 'stringent conditions' denotes, conditions, under which a nucleic acid sequence will preferentially bind to its target sequence, and to a distinctly lesser extent, or not at all, to other sequences. Stringent conditions are partially sequence-dependent and will be different under different circumstances.

Although applicant's claim language is unclear (as discussed above), it is clear that the term "stringent conditions" as employed in the specification embraces a variety of different types of conditions, which conditions may vary "under different circumstances"; further, it appears that any oligonucleotides capable of detecting P. aeruginosa under at least some type of conditions selected by a practitioner are embraced by the claims. Claim 3 further requires that the device be a "reaction tube" having the support element "arranged on one of its base areas".

Wagner et al teach the use of high density oligonucleotide arrays provided by Affymetrix ("Affymetrix P. aeruginosa GeneChip arrays") that permit "global gene expression profiling" of *P. aeruginosa* strain PAO1 (see entire reference, particularly page 2080). The Affymetrix Data Sheet establishes that it is an inherent characteristic

of the GeneChip employed by Wagner et al that it "contains probes to over 5,500 ORFs" that "comprehensively represent" the genome of P. aeruginosa PAO1 (see entire reference, particularly the first page). Thus, the microarrays of Wagner et al could clearly be employed in "detecting bacterial strains of the species P. aeruginosa," and further include oligonucleotides meeting the broadly drawn requirements of item iv of claim 2, as the claim is drawn to a device and allows for the use of any type of "stringent conditions". It is further noted that each region of a microarray containing a particular probe is inherent "predetermined" in some fashion by the individual preparing the microarray. Accordingly, the device disclosed by Wagner et al meets the requirements of independent claim 2; however, Wagner et al do not disclose a device in which the microarray constitutes a support element arranged on a "base area" of a laboratory reaction tube, as required by claim 3.

Schultz et al disclose a "reaction vessel for carrying out array processes," wherein the vessel "comprises a scale and form typical of a laboratory reaction vessel, whereby a support element is arranged on the base surfaces of said vessel, with probe molecules immobilized on given regions thereof" (see abstract and cover Figure illustration). Thus, Schultz et al teach a device having the form required by claim 3. In view of the teachings of Schultz et al, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Wagner et al so as to prepared a device in which the microarray taught by Wagner et al is present on the base surface of a vessel as taught by Schultz et al, i.e., to have substituted the vessel-form microarray of Schultz et al for the standard

microarray form taught by Wagner et al. An ordinary artisan would have been motivated to have made such a modification/substitution so as to have achieved the predictable result of providing a microarray readily usable in reactions facilitated by the presence of the microarray in tube form, such as centrifugation.

Allowable Subject Matter

21. Although no claims are currently allowed, it is noted that the following subject matter embraced by the claims is allowable: a microarray device that includes each of the members of the elected group of oligonucleotide probes (SEQ ID NOS 72-73, 76-81, 84-91, and 5-63). The prior art does not teach or suggest this particular combination of probes, the successful use of which is disclosed in applicant's specification.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diana B. Johannsen whose telephone number is 571/272-0744. The examiner can normally be reached on Monday-Friday, 8:30 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nguyen can be reached at 571/272-0731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Diana B. Johannsen/
Primary Examiner, Art Unit 1634